REMARKS

The Examiner rejected Claims 1-3 and 5-6 under 35 U.S.C. 103(a) as being unpatentable over Badyal, et al (hereafter "Badyal") (US 6,151,015) in view of Howard (US 6,097,374). Applicant traverses this rejection with respect to Claims 2-3, and 5-6 and submits that Claim 1 as amended above is not obvious in view of the cited references.

With reference to Claim 1, the Examiner looks to Badyal as teaching a pen-like pointing device that satisfies the limitations of Claim 1 with the exception of the reference mark system and comparing the two images in a manner that depends on the amount by which the body rotated between the images. The Examiner looks to Howard for the missing teaching.

The Examiner looks to Howard as providing the teaching of a reference system that defines a direction that is independent of the rotations of a body. According to the Examiner, one would be motivated to include the reference mechanism of Howard in the pointing device of Badyal because doing so would allow more flexibility to the user and allow rotation of the pen within the user's grasp.

Badyal teaches a pen like pointing device in which the rotation of the pen is determined by comparing successive frames recorded by the image sensor. The algorithm involves comparing a first image with a second image after the second image has been translated and rotated by various amounts. The Examiner admits that Badyal does not teach a reference mark system and that the comparison of the images depends on the amount by which the body of the pen has rotated.

First, the system of Badyal allows the user to rotate the pen taught therein (col. 3, lines 38-41). Hence, including a rotation sensor does not provide any new functionality to the device taught in Badyal or flexibility to the user. Accordingly, the Examiner's motivation for incorporating a reference mark in the system of Badyal is flawed.

Second, the device taught in Howard is a pointing device that calculates a distance and direction by which a cursor is moved from the movement of the user's hand relative to a

4

reference point that is fixed with respect to the earth. The reference system taught therein is a device that provides a signal that is equivalent to the output signal from a conventional mouse. Absent the present application as guide, the Examiner has not pointed to any suggestion as to how one would incorporate that system into the device of Badyal to arrive at a pointing device that satisfies the limitations of Claim 1.

The above amendments to Claim 1 emphasize that the reference system determines the rotation of the body and that the determined rotation is used in the comparison of the images.

With respect to Claim 2, the Examiner stated that Badyal and Howard disclose the pointing device of claim 1 and that Howard further discloses a reference mark system that satisfies the additional limitations of Claim 2. Specifically, the Examiner looks to the system shown in Figure 8b of Howard. Applicant must respectfully disagree with the Examiner's reading of the cited teachings in Howard.

The reference device taught in Howard consists of a disk that is weighted and turns when the devices orientation is altered with respect to the earth. The disk turns an encoding wheel 72 having a set of marks on the wheel. The number of marks that pass sensor 78 are counted to determine the amount by which the hand moved since the last measurement; however, the position of any particular mark is not determined. The device measures the amount of change since the last position measurement, not the absolute position of the device to which the mechanism is attached. This device generates a signal that is analogous to that generated by a conventional computer mouse. Hence, the combined references do not teach all of the limitations of Claim 2. Accordingly, the Examiner has not made a *primia facia* case for obviousness with respect to Claim 2 or the claims dependent therefrom. The above amendment to Claim 2 merely places the claim, as originally filed, in independent form.

With respect to Claim 5, The Examiner maintains that Howard teaches a sensor that comprises an optical system for projecting an image of said disk into said imaging subsystem. The Examiner looks to elements 77-78 and 29 in Figure 8b of Howard and cites the passage at col. 8, lines 42-57 as supporting this assertion. Applicant must disagree with the Examiner's reading of Howard.
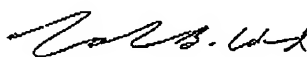
5

The device taught by Howard utilizes an encoding wheel that is rotated by the disk in question. The encoding wheel includes slots. A light source 77 projects a collimated beam of light that is interrupted by the slot pattern to generate a series of light pulses that are detected by element 78. This optical system does not form an image of the encoding wheel, no less the disk on which the weight is located, i.e., disk 75. Accordingly, there are additional grounds for allowing Claim 5.

With respect to Claim 6, the Examiner stated that Howard teaches a reference mark sensor that measures the orientation of the disk relative to the elongated body. First, Howard does not teach an elongated body. Second, as noted above, the system shown in Figure 8b measures changes in the orientation of the object to which the device is attached, not the absolute orientation. Hence, there are additional grounds for allowing Claim 6.

The Examiner rejected Claim 4 under 35 U.S.C. 103(a) as being unpatentable over Badyal in view of Howard and further in view of Blonder (US 5,620,371). Applicant traverses this rejection and repeats the arguments made above with respect to the missing teachings in Badayal and Howard. Blonder does not provide the missing teachings. Accordingly, the Examiner has not made a *primia facia* case for obviousness with respect to Claim 4,

I hereby certify that this paper is being sent by FAX to 571-273-8300.

Respectfully Submitted,

Calvin B. Ward
Registration No. 30,896
Date: July 10. 2006

Avago Technologies, LTD.
P.O. Box 1920
Denver, CO 80201-1920
Telephone (925) 855-0413
Telefax (925) 855-9214

6